PA. Communications Ltd
Trinity Farm, 28A Dunton Road,
Stewkley LEIGHTON BUZZARD
LU7 OHZ U.K.
Tel: 01525 240945 Fax: 01525 240063

CARING FOR THE SECOND SENSE

P.A. COMMUNICATIONS ANNOUNCER SYSTEM

Model ; RNAS Yeovilton - DATIS / PATSI

INSTALLATION and COMMISSIONING GUIDE

This document contains collected instructions for the equipment installed under P A Communications Works Order 1896 at RNAS Yeovilton in order to effect the transition of the DATIS service, and associated PATSI [also known as DIU], within the new tower.

INDEX

		page
1	**DATIS EQUIPMENT: An Introduction**	2
	Datis Control Button Functions	3
	Datis Block Diagram	4
	Datis Connections	5
2	**DATIS-PATSI System**	
	Connecting PATSI to DATIS	6
	Executive Control	7
3	**PATSI EQUIPMENT**	8
	Patsi Block Diagram	8
	Patsi Operation	9
	Patsi Major States	10
	Identification of Assemblies	13
4	**INSTALLATION**	14

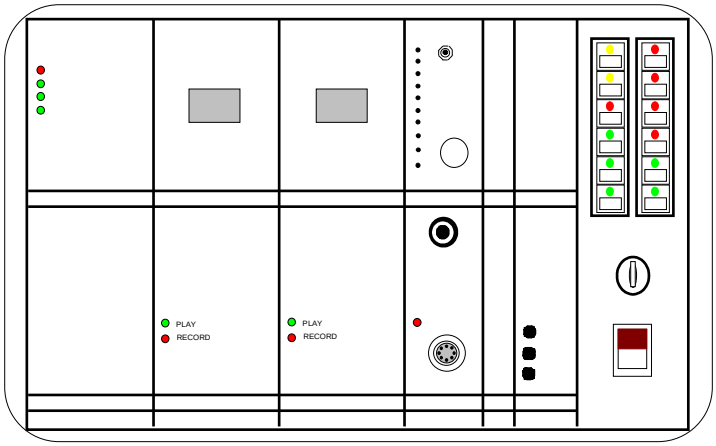
APPENDICES

Appendix A	Connecting a Transmitter to a DA6U6 NATO DATIS
Appendix B	PATSI Composer EPROM DATIS
Appendix C	PATSI - EDDS Interface Protocol definitions {old EDDS}
Appendix D	A typical “Site INSPECTION & TEST Specification”
Appendix E	List of SEL-CODES

Issue A 18 May 2006

1. EQUIPMENT: An Introduction

DATIS, DA6U6 is an ATIS recorder, providing an Air Terminal Information System that uses digital recording and message playback techniques eliminating the wear and tear problems of mechanical systems and thus increasing the reliability and availability of the service.



The DA6U6 is a desktop version of DATIS which is operated at the front panel controls,

It has a LEMO connector on the front of the DM2 for the user's headset.

Both Voice stores have Alphanumeric Status Displays.

The message text is recorded by the operator and is retained in a VOICE STORE, when the message is recorded and checked it may be put into service as being the current information.

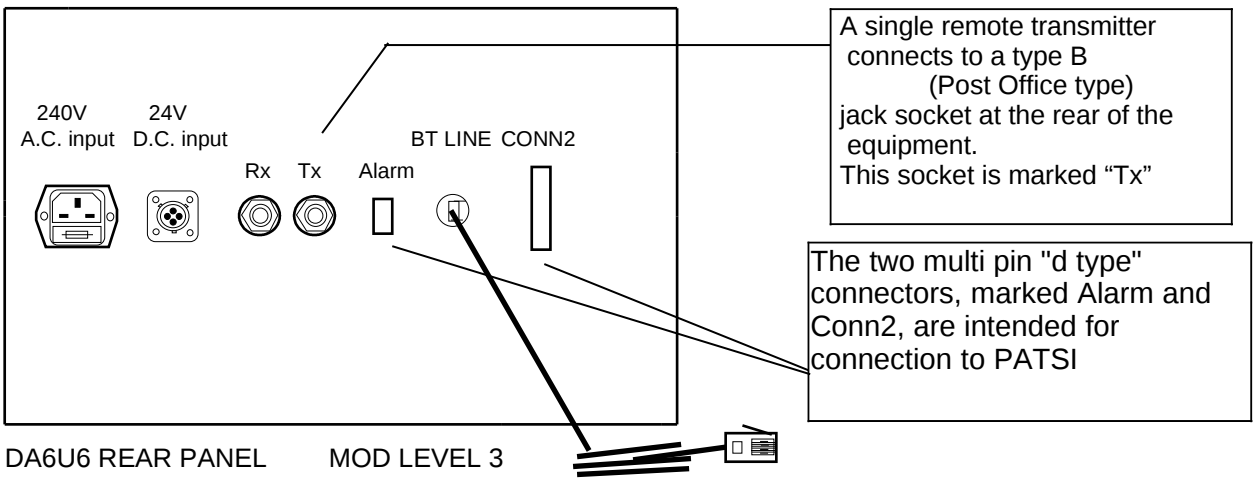
The P. A. Communications "DATIS" provides a continuous flow of spoken information by replaying a recorded message. The process of storage and replay of the text involves NO MOVING PARTS.
NATO Stock No. 51 RA 0160548

There are TWO IDENTICAL voice stores contained within the equipment.
One of the two stores is selected for providing the message for transmission and is termed the "ONLINE STORE", the other store is available for preparation of further messages, (without disturbing the online transmission) and is referred to as the "STANDBY STORE".

The press button switch panel is used both for preparing stored messages and to make the selection of which store should be Online. Changeover, once initiated, occurs at the completion of the message currently being transmitted.

A key operated switch on the DATIS front panel is used to select / deselect the set of press buttons. The panel is marked "LOCKED" and "ACCESSED", it should be in the "LOCKED" position for automatic PATSI operation.

Both the Audio Output and the "off-air" input have telecommunications line interfaces, approved for connection to B.T., in order that distant transmitter or receiver sites may be used.


240V
A.C. input
24V
D.C. input
BT LINE
CONN2
Rx
Tx
Alarm
A single remote transmitter connects to a type B (Post Office type) jack socket at the rear of the equipment. This socket is marked “Tx”
The two multi pin "d type" connectors, marked Alarm and Conn2, are intended for connection to PATSI
DA6U6 REAR PANEL
MOD LEVEL 3

DATIS - Control Button functions.

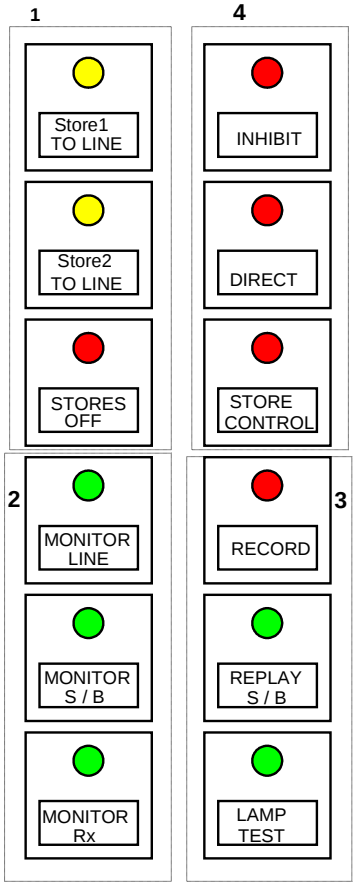
There are twelve illuminated push button control switches in two columns, they can be grouped by function.

1.	STORE SELECTION	Datis Output
2.	MONITOR SELECTION	Headset Signal
3	MESSAGE CONTROL	Message Recording and check
4	DATIS CONTROL	Executive Control

Group 1

STORE 1 TO LINE	Selects message "1" for transmission.
STORE 2 TO LINE	Selects message "2" for transmission.
STORES OFF	Disconnects both stores from Datis output.

The store selection controls the priority of the transmitted message.
Note that the three controls are interlocked with the lower button of group 4, the STORE CONTROL.
Datis operation requires that STORE CONTROL be held down while the selection is made.



Group 4

The "Store Control" button has a red indicator that lights while the lock switch is in the "ACCESSED" position.
If the controls are "LOCKED" this led is extinguished.

INHIBIT	Disconnects all output signals from the unit.
DIRECT	Allows transmission of messages direct from the headset microphone. (Interlocked with Store Control).
STORE CONTROL	Interlock button to prevent accidental operational changes.

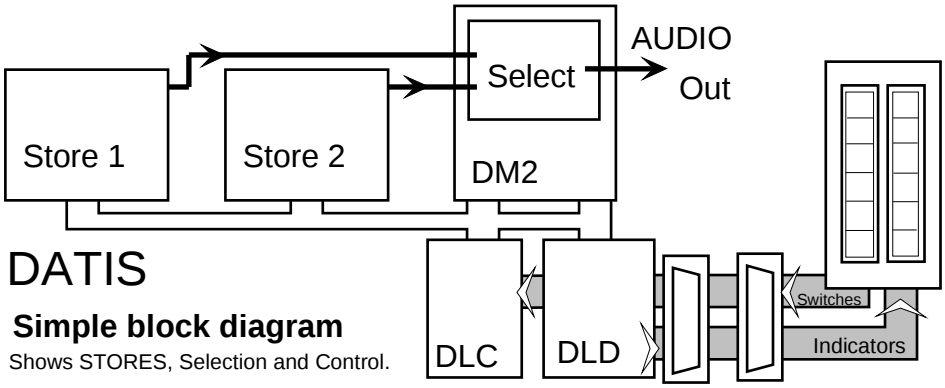
Group 3

RECORD	Records headset microphone voice message to the store not selected. (Note that if both stores are "off", the same message goes to both stores.)
REPLAY S/B	Replays the message on the standby channel.
LAMP TEST	Checks all button lamps when pressed. The lamp test button illuminates all of the leds except the "STORE CONTROL" led.

Group 2

MONITOR LINE	Outgoing Datis message to headset.
MONITOR STANDBY	Standby message to headset.
MONITOR R/X	Datis channel VHF receiver to headset.

Introduction (continued)



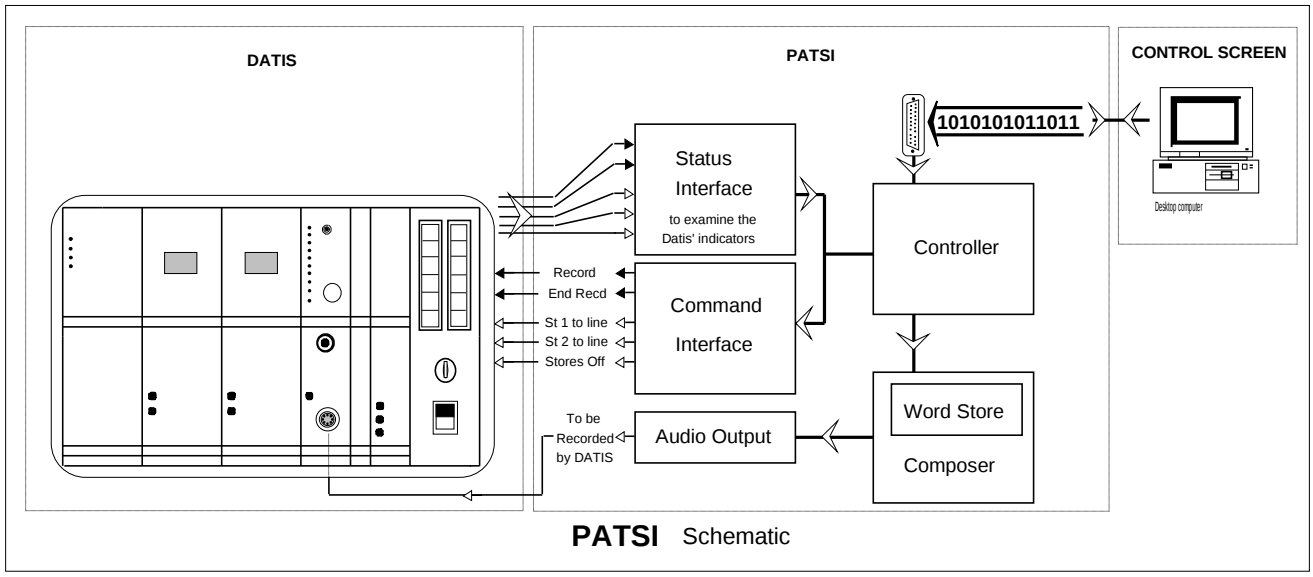
Simple block diagram
Shows STORES, Selection and Control.

When used manually the messages are recorded using the operator's headset.

The selected store will continue to playback, repeating the message until the operating requirements are changed.

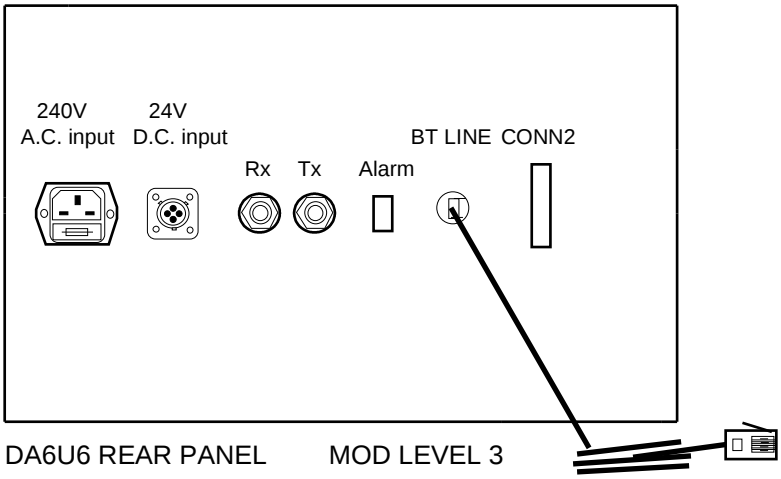
When the key operated switch on the DATIS front panel is set to the "LOCKED" position it is possible for PATSI to operate the Datis pressbuttons.
Cable 1573 connects these remote control signals from PATSI to the DATIS, in both directions simulating both the switches and indicators of a DATIS remote control switch panel.
For convenience, a 25 way “one to one” commercial cable is employed for 1573, fitted with db25 connectors, one end male the other end female.

EDDS communicates via a “satellite PC” that is provided in the cabinet, taking the Ethernet data and outputting commands via it’s serial port at 9600 baud, 8 bits data, no parity and one stop bit.



PATSI Schematic

DATIS Connections.



DA6U6 REAR PANEL MOD LEVEL 3

The majority of connectors at the rear of the Datis are used to connect to power or facilities.

There are two "type B" jack sockets which are for the lines to the radio equipment. Audio signals are standard 600 ohm balanced pairs.

The telephone cable plugs into the "answering machine socket".

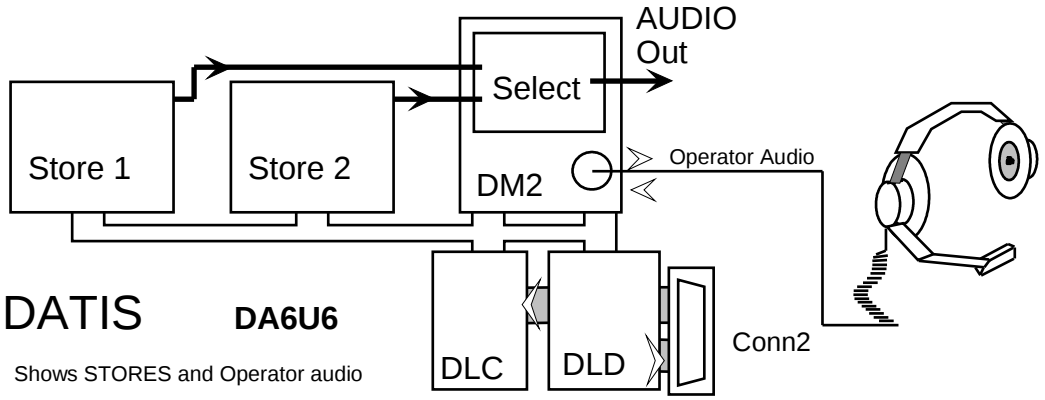
The two multi pin "d type" connectors, marked Alarm and Conn2, are intended for connection to PATSI, the audio voice signals from the DATIS to the ATIS transmitter are continuously monitored and an alarm is given if the signal fails or drops to a low level.

Audio for recording

One of the two stores is selected for providing a message for transmission and is termed the "ONLINE STORE", the other store is available for preparation of the new (or subsequent) message, without disturbing the online transmission and is referred to as the "STANDBY STORE".

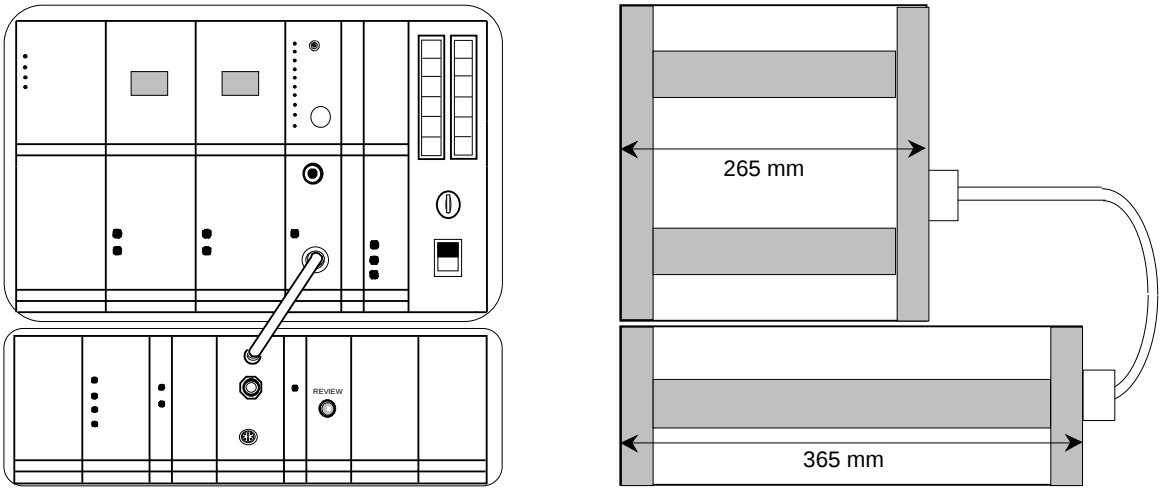
The operator's voice is recorded when a message is prepared into either store.

The microphone of the operator's headset is used to pick up the audio, when PATSI provides a real voice synthesis, the same route through the headset socket on the front panel is employed.



2. Connecting PATSI to DATIS.

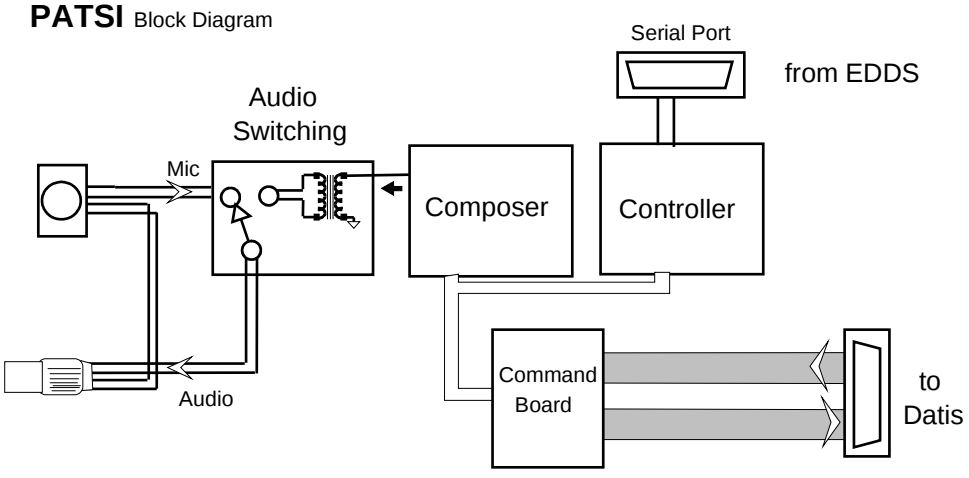
The DATIS unit should be positioned on top of the PATSI unit, allowing the flying lead to be plugged into the DATIS headset socket on the front panel.



Short interconnecting cables are fitted between the two units

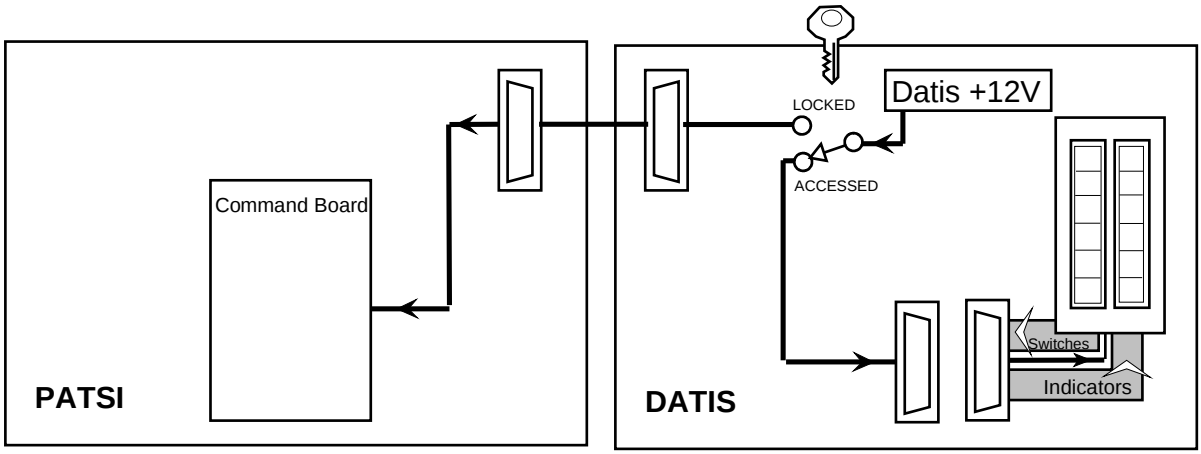
The controls and indicators are via conn2, a db25 connector, this cable is fed to an indicator booster board that is fitted inside DATIS.
The existing control switch panel and the PATSI Command board then both have access to the Datis's "switches" and can also monitor the indicators.
The command board can be considered to be another "set of switches" that will operate the DATIS.

PATSI Block Diagram



The Audio Switching is arranged so that when DATIS is switched to "ACCESSED" a path exists for the microphone signal to pass directly to the DATIS, in a "transparent manner", the operator's headphone feed is "looped through" the LEMO sockets and remains connected at all times.

Executive control.



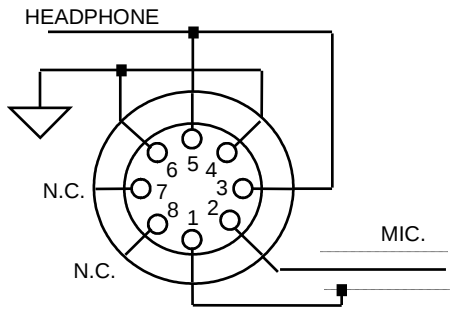
Since the DATIS commands are issued by the press button switches, it is possible to common the "hot" side of all the switches on a panel, feeding twelve volts to the switches to enable the panel.
This is the function of the Lock Switch on the front panel of the DATIS.

PATSI has a command board that emulates a set of press buttons, it also has it's "switches" connected so that they can be enabled/disabled by a single wire carrying +12 V.

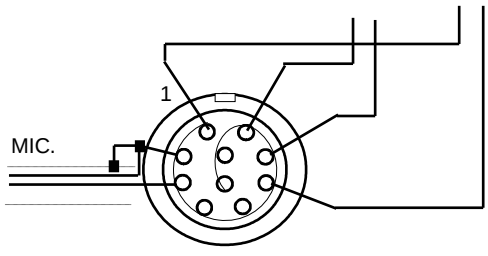
Since PATSI is connected into the Datis's "remote control" socket this lock switch will also "isolate" PATSI's ability to effect the Datis controls.

At all times it is still possible to determine the status of the Datis, owing to the fact that the indicating leds will still operate irrespective of the positions of the lock switch.

Headset Connectors.

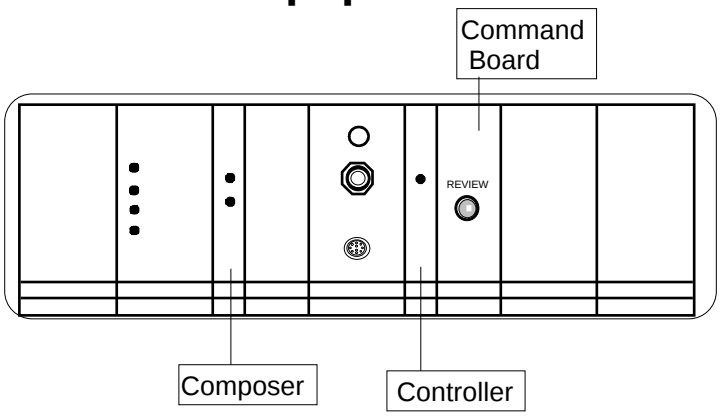


Headset Connector
Lemo Type 3 "RAF"



Headset Connector
Lemo Type 2 "RN"

3. PATSI Equipment.



PATSI is constructed using plug-in eurocards housed in a 3U desk-top case.
It can operate from A.C. line or from auxiliary D.C. input power.

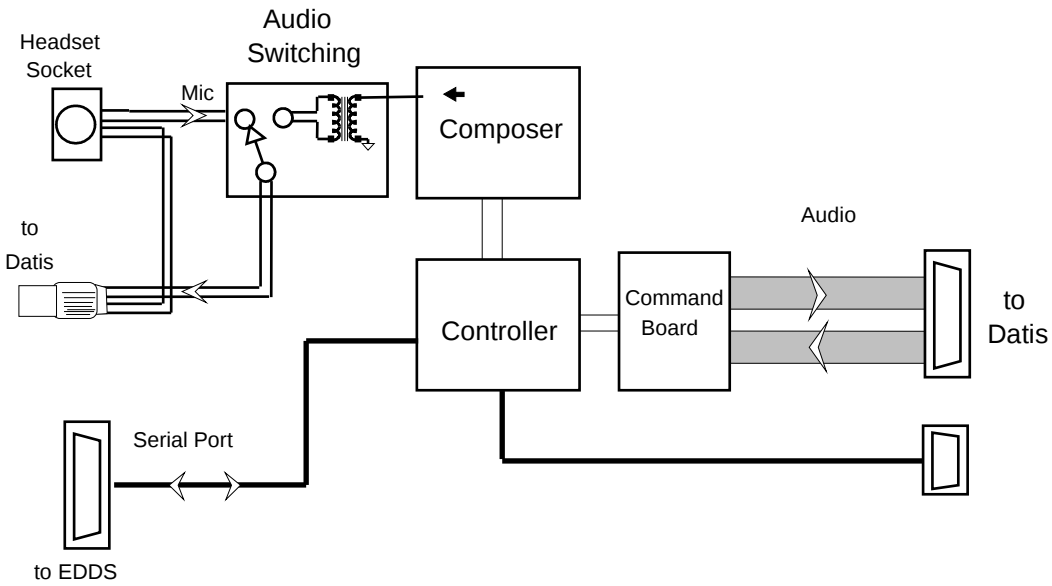
It is a multi-processor system using entirely solid state memory (no disk drives).

Two processors share the task :-

- the controller which communicates with EDDS,
- the second processor controls the speech composer which provides the audio signal that is recorded into the Datis standby store.

A press button is provided on the front of PATSI that both selects the DATIS standby store and puts it into replay, simulating a press of two Datis buttons.

The Audio Module has a LEMO socket to suit a standard RN headset, there is a flying lead with a matching (size type 3B) LEMO plug for connection to the front of the DATIS.



PATSI Block Diagram

PATSI Operation

Each processor has a dedicated firmware contained in EPROM.

Composer

The composer provides the audio signal, it is a complete digital announcer on one card, it is only necessary to change this one card in order to change the spoken voice.

Each word or phrase (known as a vocable) has a unique two letter code, a spoken message will consist of a quantity of vocables contained in a file.

The file is known as a word action list (WAL), it is stored in the composer's SRAM having been transferred from the controller via the serial channel comms which is a serial link between the two PATSI processors.

The firmware is called DVOX. It reacts to a small number of commands which are transmitted from the controller via the serial channel comms. The control EPROM also contains the vocable tables that allows the composer to recognise valid words and phrases.

Controller

The controller communicates with EDDS, it controls the DATIS with the command board, it can both send commands to Datis and see that they have been acted upon by examination of the led indicators.

The command board has a quantity of opto-isolators that "are lit" by the Datis indicator booster board, mimicking the led indicators.

These opto-isolators are "read" by the controller to order to fetch Datis status.

The serial link to EDDS is fitted on this card. It is provided by a separate ACIA chip and RS232 level converter to allow for most types of serial VDU and baud rate.

PATSI Commands.

All commands are via the serial port and are sent and received at 9600 baud.

[9600 N 8 1]

Controls to PATSI are two letter commands, starting with X.

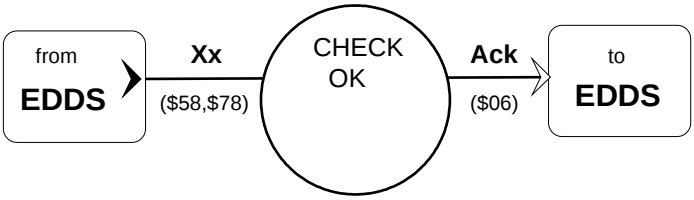
Command	Hex Value	Purpose
Xa	$58,$61	End of Phrase
Xb	$58,$62	End of File
Xc	$58,$63	Change Stores
Xd	$58,$64	Stores Offline
Xx	$58,$78	Hello (test \ handshake)

Control code set. (PATSI to EDDS)

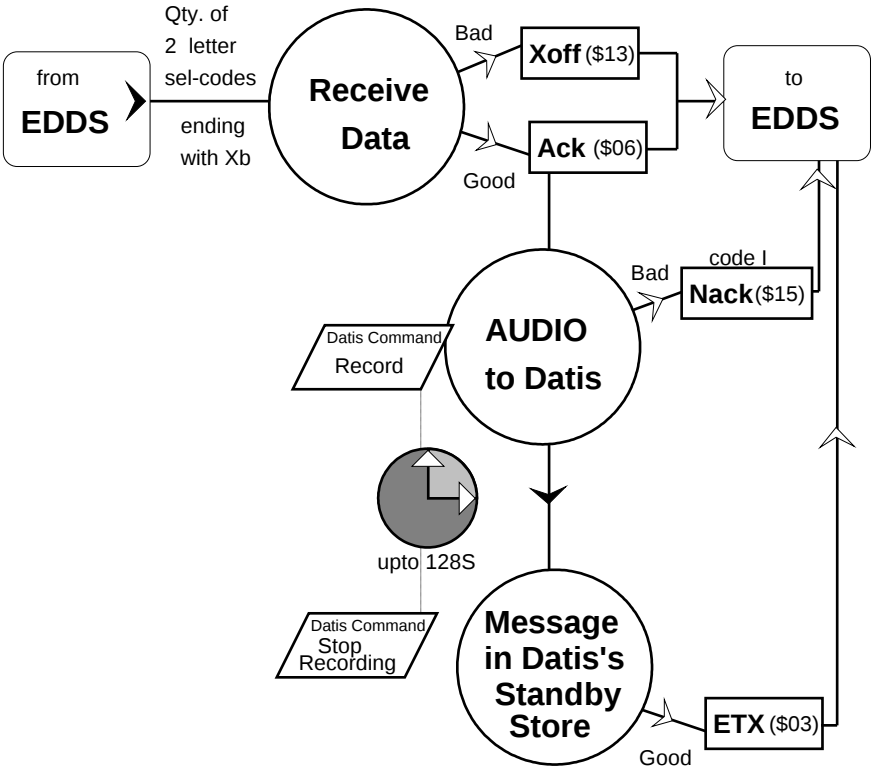
Code	Name		Hex Value	Purpose
Code I	Nack	not acknowledge	$15	loading error
Code II	ETB	end of block	$17	new message is online, running
Code III	ETX	end of text	$03	good message in standby
	X-Off		$13	error, please repeat file transfer
	Ack	acknowledge	$06	saying O.K to EDDS
	EM	end of media	$19	Datis now offline
	BEL	bell	$07	Datis Alarm is activated

Patsi Major States

EDDS sends a check, Xx = hello - PATSI responds with Ack

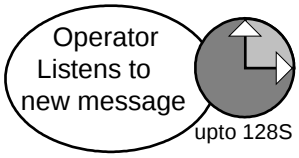


EDDS sends data to PATSI.

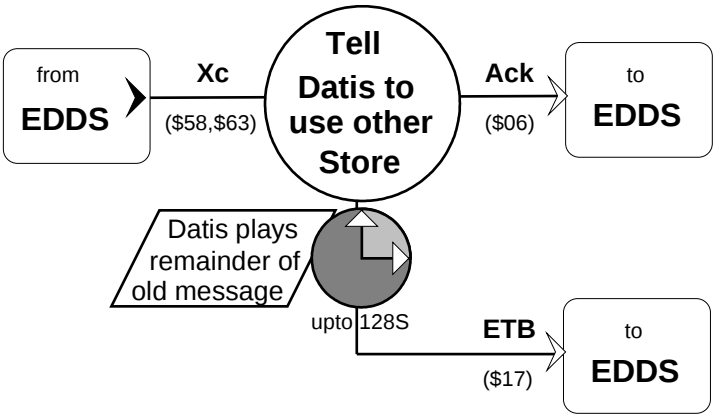


Patsi Major States (Continued)

Datis store changeover. (Xc)



The store changeover action should be initiated after the operator has had opportunity to review (by listening to) the spoken message.
Hence the Xc command is unlikely to be appended to the message file.



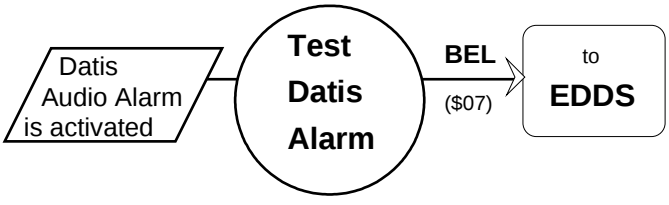
In response to Xc, PATSI will send Ack to indicate it has sent the command successfully.

Owing to the real time nature of the application there could be a time delay before DATIS appears to act upon the command.

PATSI will check DATIS indicators until it determines that a store changeover has occurred.

Then PATSI will send a code to EDDS to indicate that "new message is online" = ETB=$17

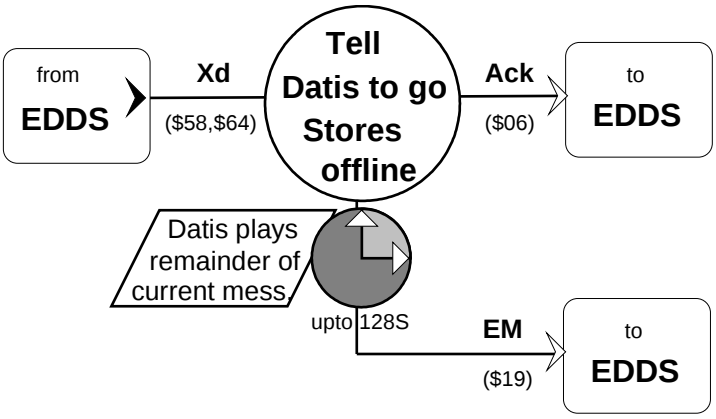
DATIS has an alarm that will operate if the message fails during replay.



PATSI can detect this and will send BEL=$07

Patsi Major States (Continued)

DATIS will be closed down at the end of the day. (Xd)

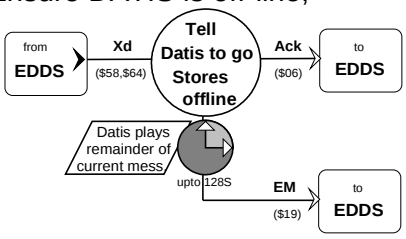


Xd will take DATIS offline (after the current message has finished).

PATSI tells EDDS that the current message has finished and that DATIS is now off-line by sending EM=$19.

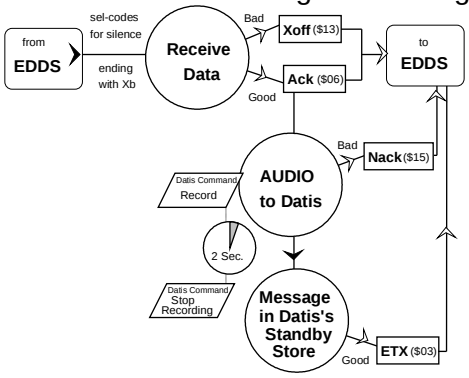
DATIS is normally left powered and at this point would now contain two messages which are both off-line, should EDDS wish to delete these (perhaps in the early hours of the morning) there is a command sequence that will perform this "trick".

1. Ensure DATIS is off-line,



Xd results in EM.

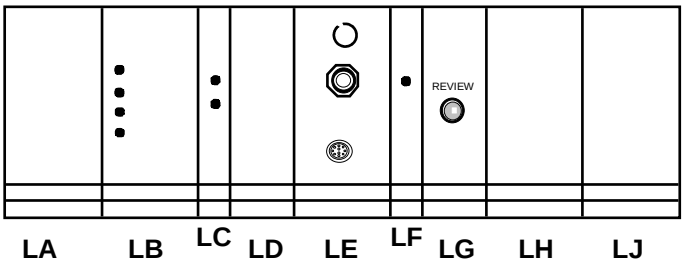
2. Load a short message containing silence, post it to Datis.



With stores off-line, both 1 and 2 will have accepted the silence.

3. Assert Off-line again (Xd), PATSI should send Ack followed by EM

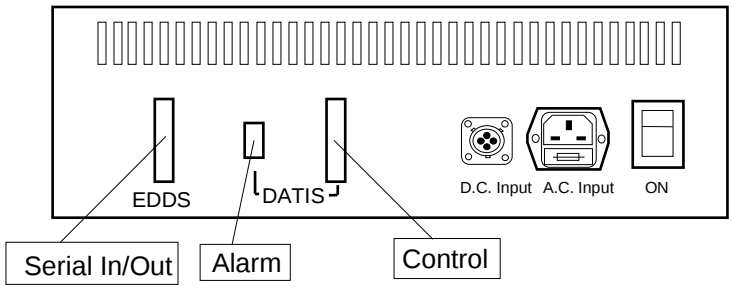
Identification of Assemblies.

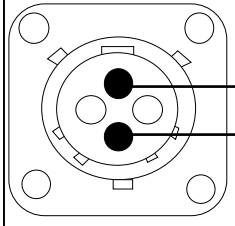


Unit	Description	Part No.	hp
LA	Power supply unit (RAW DC)	S32048	12
LB	Power supply unit (DC-DC)	S33033	12
LC	Composer	P12058	4
	Alternate Composer (New board)	P12059	
LD	blanking panel		8
LE	Audio Module	P19156	12
LF	Controller	P12730	4
LG	Command Board	P19220	8
LH	blanking panel		12
LJ	blanking panel		12
			84 hp

Plug in unit LC located in new tower at Yeovilton is new type P12059 S/no 1108
Fitted with four text sockets [4 of 6 as IC64, IC65, IC66 and IC67, IC67 contains the 2000 upgrade]

Rear of equipment showing connectors.

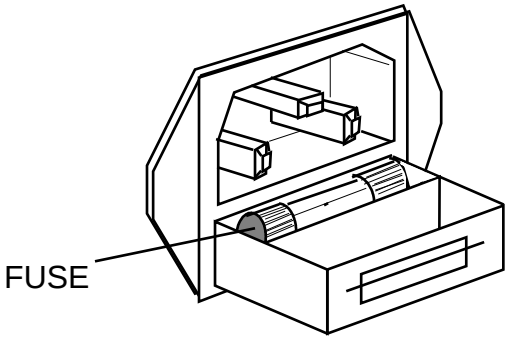




Burndy Metalok Bantam, mating female line socket = UTG6104SN

4. INSTALLATION

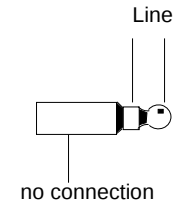
1. Power Source
The **equipment** is powered from two 230V AC mains inputs, via a standard IEC sockets.



Mains fuse, inside IEC receptacle
20mm type 3.15 A M

2. Audio from Datis
A suitable [twisted pair or screened twisted pair] cable should be connected between the "Tx" Type B jack socket of the DA6U6 Datis to the transmitter.

The master adjustment of the level of the output is by the Datis front panel preset, VR1, set to suit level sent to line for ATIS transmitter, nominally set to neg 13db on leaving factory.



N.B. Type B jack

3. Keying from Datis
Keying is by completion of the DC loop on the audio pair
See appendix A in this manual.

4. Telephone Jack for DIAL-IN access to message
A separate line interface is provided, presented as a two wire connection on pins 2 and 5 of a standard U.K. telephone cord which can be plugged into an analogue P.A.B.X. port, or into a 431 jack being a Network Termination Point of the P.S.T.N.
(Public Switched Telephone Network operated by British Telecom, Mercury and the City of Hull).
Refer to DATIS DA6U6 user manual.

5. Interconnections between PATSI and DATIS
Two cables should be fitted, Cable **1573** and cable **1610**.
Refer to next page of this manual.

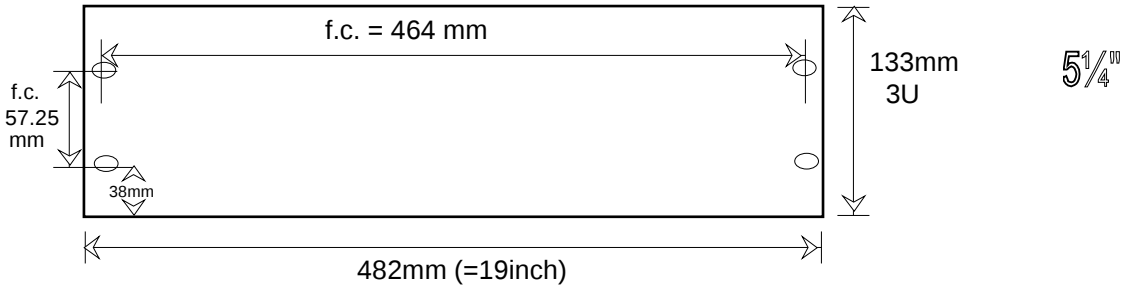
6. Data feed to PATSI from EDDS
One cable should be fitted, Cable **1896** with a db25m on one end and db9f at the other.

db25m	Typical commercial cable wiring for db9 PC serial port			db9f
1	black	------- n.c.	n.c.	1
2	brown	----------	red	2
3	red	----------	brown	3
4	orange	------- n.c.		4
5	yellow	------- n.c.		
6	green	------- n.c.		
7	blue	----------	blue	5
8				6
				7
20	purple	------- n.c.		8

This cable connects to the more modern db9 rather than db25 version
See information on next page of this manual.

Layout

The equipment is contained in cabinet that holds a nineteen inch “subracks”, a typical example is a panel having a height of 5¼ inches, also known as 3U height. It has mounting ears to suit “19inch” rack mount cabinets with fixing centres [f.c.] at 464 mm.



Both DATIS and PATSI are desktop units, their width is 475mm, which is greater than the fixing centres of 464mm. A standard shelf is used inverted, and the cage nut rails inside the cabinet are modified to take advantage of the full 482mm aperture.
(without inversion a standard shelf would offer an aperture of only 444mm.)

The total height required is 445mm plus a suitable clearance at the top for the ventilation fans, estimated at 600mm to allow for adequate air flow.

Interconnecting cables and designations.

PATSI Connector	Legend		Cable Number	Other end
db25f	EDDS	from EDDS	**1896**	
db25m	DATIS	From Datis	**1573**	db25f
db9m	DATIS	From Datis alarm	**1610**	db9f
IEC	n/a	AC Mains	n/a	BS1362 plug top

The db25f on the rear panel of PATSI is marked EDDS.
PATSI connector “EDDS” db25 female (terminating 1896)

Pin 2	⇦	PATSI serial input
Pin 3	⇨	PATSI serial output
Pin 7	SIGNAL GND	

Only three pins out of the 25 are implemented.
Data in =2, Data out = 3 and 7 is Gnd.

Cables number 1573 and 1610 are two link cables to the DA6U6 DATIS that is stood on top of the PATSI, hence their length need only be about half a meter.

PATSI connectors “DATIS”

Alarm
db9 male (source 1610)
pins 5 and 9 only
Dry contacts

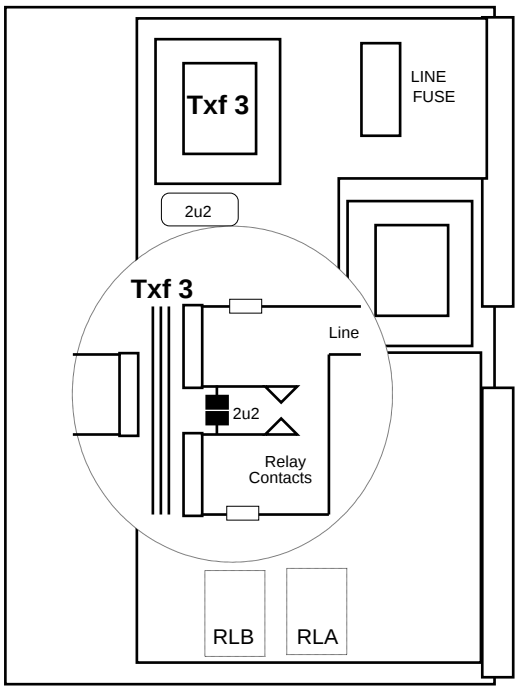
Facilities
db25 male (terminating 1573)
All pins to be connected
Bi-directional

Cable 1610 connects the DATIS Audio Alarm contacts to PATSI
Cable 1573 connects the remote control signals from PATSI to the DATIS, [in both directions – both switches and indicators] simulating a DATIS remote control switch panel.
For convenience, a 25 way 1:1 commercial cable is employed for 1573.

Appendix A
Connecting a Transmitter to a DA6U6 NATO DATIS

A single remote transmitter connects to a type B (Post Office type) Jack socket at the rear of the equipment. The socket is marked “Tx”
[There are two type B jack sockets on the rear of the DA6U6, one marked “Tx”, the other is marked “Rx” which is an input that accepts an audio pair from a monitor receiver.]

The Audio Output is designed to key the transmitter using the audio pair. When the transmitter is required to send (TX ON) either RLA or RLB contacts provides a low resistance loop.



The audio output transformer has a split secondary which has the A.C. circuit completed with a 2u2 capacitor.
The contacts of either RLA RLB are used to key the transmitter, by placing a short across the 2u2 capacitor.

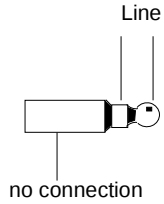
The transmitter line output is fully balanced and has a fuse disconnection barrier using a 20 mm type 160 mA quick blow (F) fuse in an enclosed fuse holder on the DM2 plug in unit daughter board

There are two revisions of the Datis Module DM2, both are interchangeable the older type uses relays to select the store to line the later type employs electronic switching.

Old Type DM2 plug in module (P11270).
The Datis Module has two relays for store selection, (RLA for store one and RLB for store two). Hence there are two sets of contacts in parallel either of which “short the 2u2”.

New type DM2 plug in module
Has only one relay for keying, so only one contact to “short the 2u2”.

Connector.



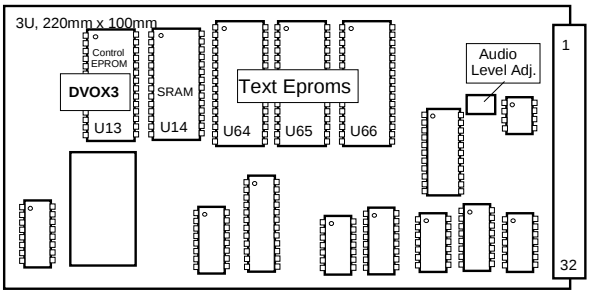
Both the audio and Tx keying is catered for using one balanced pair.

N.B. Type B jack

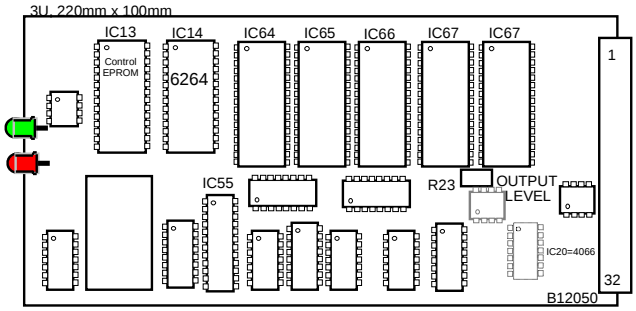
Appendix B COMPOSER EPROMS

PATSI was originally shipped with a P12058 composer board that was replaced in 2000 in some machines by one with a larger capacity, namely the P12059. The original composer card had four plug-in EPROM, the control firmware (DVOX 3) in U13 and three text EPROM - U64, U65 and U66.

P12058



New P12059



The composer located in the new tower at Yeovilton is type P12059 S/no 1108

Fitted with four text sockets [4 of 6 as IC64, IC65, IC66 and IC67, IC67 contains the 2000 upgrade]

U64 / IC64 contains the following vocables :-
Aa-Az, Ba-Bw, Ca-Cx, Da-Do, Ea-En Ew, JaJb, KaKb KdKeKf and Hb

U65 / IC65 contains the following vocables :-
Eo-Ez, Fa-Fz, Ga-Go, Ha-Hm, Ho-Hx, Ia-Il

U66 / IC66 contains the following vocables :-
Im-Iz, Jc-Jz, Kc, La-Lc, Le-Li, Ma-Md, Na-Nb, Pc, Qa-Qc, Cj, Kg, Kh and Hn

IC67 contains the 2000 upgrade, containing the following vocables :-
Bd, Bh, Bm, Gw, Gx, Gz, Ht, Hy, Jc, Ks, Kz, Lo, Lq-t, Mz, Nh, Np-Nw, Qj-m and Tb-To

Correct use of delays.

Delays should generally be placed in front of a vocable. e.g. CpEa

Co	32mS Pause
Cp	64mS Pause
Cq	96mS Pause
Cr	128mS Pause

Cs	Intake of breath

Cu	160mS Pause
Cv	192mS Pause
Cw	224mS Pause
Cx	Long pause + breath t = 608mS

The values of each delay is important.
As an audible example try the following.

KaJbEaAaXb	sounds strange
KaJbCoEaAaXb	sounds better
KaJbCpEaAaXb	sounds natural

whereas

KaJbKfAaXb	sounds OK
KaJbCoKfCoAaXb	sounds perfect

And using Ea again we have the best result
KaJbCpEaCoAaXb

Appendix C

PATSI - EDDS Interface Protocol definitions {old EDDS}.

1) Serial Comms Port Speed - **9600 N 8 1**

2) Xx=hello - PATSI responds with Ack where Xx=$58 $78 and Ack = $06

3) Values for [codeI], [codeII], and [codeIII]. These are the PATSI to EDDS codes.
So far we have mentioned Ack=$06 X-Off=$13 Nack=$15

PA Consulting Control code set. (PATSI to EDDS)

Code	Name		Hex Value	Purpose
Code I	Nack	not acknowledge	$15	loading error
Code II	ETB	end of block	$17	new message is online, running
Code III	ETX	end of text	$03	good message in standby
	X-Off		$13	error, please repeat file transfer
	Ack	acknowledge	$06	saying O.K to EDDS
	EM	end of media	$19	Datis now offline
	BEL	bell	$07	Datis Alarm is activated

4) There is no protocol test in comms from EDDS to PATSI

The input from EDDS is stated in the PA consulting Group RFQ as:-
"These data stream shall be packaged into a message format and the meaning of each character code are defined in Annex A"

Having discussed this by telephone both PA Communications Ltd. and PA consulting Group confirm that PATSI should expect raw data without any preamble or header characters but be simply followed by an Xb at the end of the file.

Appendix D
P.A. COMMUNICATIONS Ltd. ANNOUNCER SYSTEM.

SITE INSPECTION & TEST SPECIFICATION

Description: PATSI to DATIS interface.

Document prep. date: 18th May 2006 Works Order No. 1896

Issue: A Customer Contract No.

Specification Number: 1896TA.DOC Name of tester: _____

1. SCOPE: This specification covers all the hardware items of the above mentioned Works Order. It requires that separate units of the order have previously been set-up and satisfactorily performance tested where possible.

2. METHOD To ensure all test and inspection items are covered, the tester must check the appropriate box for each line as it is completed. [tick box ☑ when done.]
The PATSI should be connected to a fully functioning DATIS as detailed below

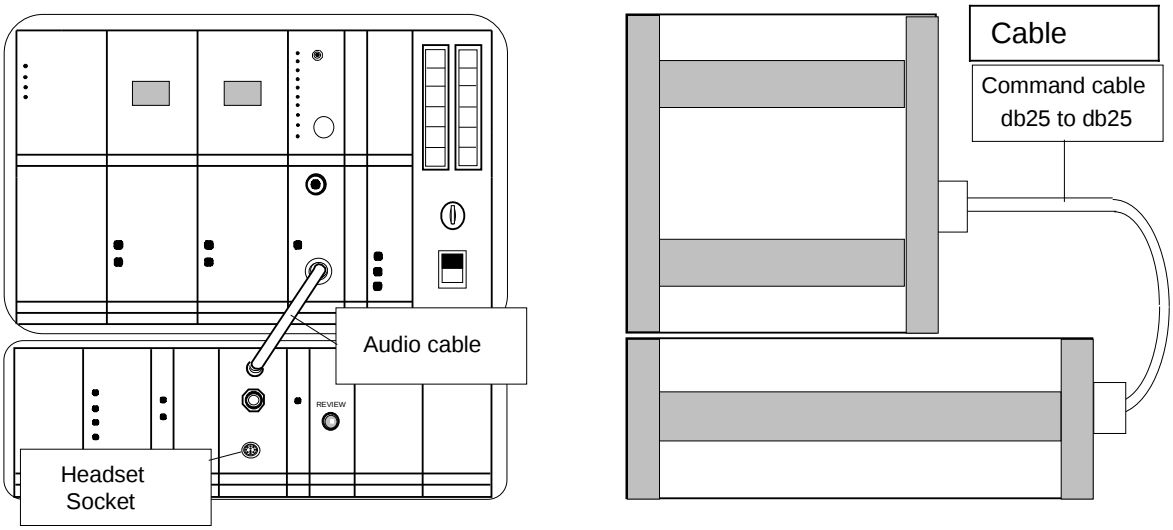
3. SYSTEM ITEMS.

	Item	present	absent	Comments.
DA6U6 DATIS S/No 128 635	1	☐	☐	_____
PATSI (DCU) S/No 100 588 496	2	☐	☐	_____

Equipment required to carry out testing
Headset with 10 pin LEMO connector (RNAS standard).
PA Document : Installation & Commissioning guide 1896ICA.DOC
Suitable communications terminal capable of transmitting serial data at 9600 8N1

4. EQUIPMENT FUNCTIONAL TESTS.

4.1 ☐ Connect cables as diagram, including alarm cable 1610



4.2 ☐ plug headset into mating connector on front of PATSI unit.

4.3 ☐ Position DATIS lock switch to ACCESSED.
☐ Press the LAMP TEST button and check that you have normal control of the DATIS (the leds will light).

4.4 Make a manual test recording

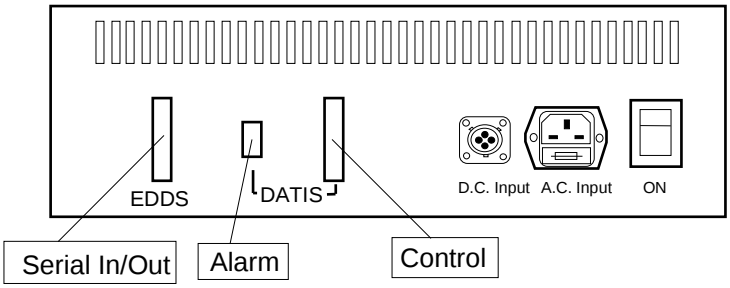
- ☐ press the DATIS "Record" button. both voice stores will go into Record mode and the red RECORD button lights.
- ☐ Having spoken the message into the microphone of the headset press "Replay S/B" button to terminate the recording. The red record led goes off as we exit record.
- ☐ press the "Store One to Line" button to select STORE 1 TO LINE.
- ☐ Check that with MONITOR LINE selected, the recorded message is reproduced clearly in the headset.

4.5 ☐ Position DATIS lock switch to LOCKED. Check that the DATIS buttons do not react.

4.6 ☐ Press the REVIEW button on the front panel of the PATSI, this should select and start replay from the standby store.

4.7 ☐ Check the basic comms by connecting a communications terminal capable of transmitting serial data at 9600 8N1 to the db25 port [marked EDDS] at the rear of PATSI.

If necessary unplug cable 1896 that connects from EDDS.



4.7.1 ☐ Type in Xx at the communications terminal and ensure that there is an “Ack” reply.

Xx = hello - PATSI responds with Ack where Xx=$58 $78 and Ack = $06

4.8 The DATIS is controlled by PATSI when commanded via the serial link from EDDS.
There are three main functions.

RECORD SEQUENCE	send sel-codes to build a message and end with command Xb
STORE CHANGE SEQUENCE	command Xc
STORES OFF SEQUENCE	command Xd

4.8.1. RECORD SEQUENCE

- ☐ Send a message to PATSI, observe that either (or both) store shows RECD and has corresponding red leds lit

Store recording logic is a function of DATIS, the record sequence from PATSI emulates the record button being pressed.

CsKaJbCpEaCoAxXaLaXb

4.8.2 STORE CHANGE SEQUENCE

- ☐ Send an Xc to PATSI, observe that once the running message has finished the on-line store has changed. (the priority leds will change on the Datis as soon as the command has been sent).
- ☐ Send a second Xc to PATSI, observe that "the other store" will also change over.

PATSI observes the led indicators for both stores, so this test has to be performed for both stores.

4.8.3. STORES OFF SEQUENCE

- ☐ Send an Xd to PATSI, observe that both priority leds extinguish and that once the running message has finished both stores stop replaying.

Appendix E List of SEL-CODES

Aa	ALPHA
Ab	BRAVO
Ac	CHARLIE
Ad	DELTA
Ae	ECHO
Af	FOXTROT
Ag	GOLF
Ah	HOTEL
Ai	INDIA
Aj	JULIET
Ak	KILO
Al	LIMA
Am	MIKE
An	NOVEMBER
Ao	OSCAR
Ap	PAPA
Aq	QUEBEQ
Ar	ROMEO
As	SIERRA
At	TANGO
Au	UNIFORM
Av	VICTOR
Aw	WHISKY
Ax	XRAY
Ay	YANKEE
Az	ZUZU

Ba	Zero
Bb	One
Bc	Two
Bd	Three
Be	Four
Bf	Five
Bg	Six
Bh	Seven
Bi	Eight
Bj	Nine
Bk	Ten
Bl	Hundred
Bm	Thousand
Bn	Zero F.I.
Bo	One F.I.
Bp	Two F.I.
Bq	Three F.I.
Br	Four F.I.
Bs	Five F.I.
Bt	Six F.I.
Bu	Seven F.I.
Bv	Eight F.I.
Bw	Nine F.I.
By	OH

Ca	DECIMAL
Cb	DEGREES
Cc	DEGREES_C
Cd	FEET
Ce	METRES
Cf	YARDS
Cg	KNOTS
Ch	MILLIBARS
Ci	THOUSAND
Cj	KILOMETRES
Ck	PLUS
Cl	MINUS
Cm	10Km or more
Cn	GREATER THAN
Co	32mS pause
Cp	64mS pause
Cq	96mS pause
Cr	128mS pause
Cs	Intake of breath

Da	AMBER
Db	BLACK
Dc	BLUE
Dd	GREEN
De	RED
Df	YELLOW
Dg	WHITE
Dhi	AMBER F.I.
Di	BLACK F.I.
Dj	BLUE F.I.
Dk	GREEN F.I.
Dl	RED F.I.
Dm	YELLOW F.I.
Dn	WHITE F.I.

Ea	TERMINAL INFORMATION
Eb	CODE
Ec	TIME
Ed	DIVIDING RUNWAY
Ee	INSTRUMENT RUNWAY
Ef	DUTY RUNWAY
Eg	SURFACE WIND
Eh	COLOUR CODE
Ei	FORECAST COLOUR CODE
Ej	VISIBILITY
Ek	QFE
El	CLOUD
Em	TEMPERATURE
En	DEW POINT
Eo	QNH
Ep	TRANSISTION POINT
Eq	FREEZING LEVEL
Er	TWO DEGREE LEVEL
Es	TWO THOUSAND FEET WIND
Et	AIDS STATUS
Eu	AREA
Ev	DIVERSION AIRFIELD
Ew	DIVERSION
Ex	AIRFIELD
Ey	ELEVATION
Ez	RUNWAY

Xa	end of phrase	Xb	end of file
Xc	use new message	Xd	offline DATIS'

Fa	CUMULONIMBUS
Fb	STRATUS
Fc	CUMULUS

Ga	BEACON
Gb	DF
Gc	DRDF

Ha	CLOUD
Hb	DRY
Hc	FINE

Fd	ONE-EIGHTH
Fe	TWO-EIGHTHS
Ff	THREE-EIGHTHS
Fg	FOUR-EIGHTHS
Fh	FIVE-EIGHTHS
Fi	SIX-EIGHTHS
Fj	SEVEN-EIGHTHS
Fk	EIGHT-EIGHTHS
Fl	DAMP
Fm	WATER
Fn	PATCHES
Fo	STANDING
Fp	FLOODED
Fq	LYING
Fr	CLOUDY
Fs	SHOWERS
Ft	MODERATE
Fu	SEVERE
Fv	SLEET
Fw	DRIZZLE
Fx	FREEZING
Fy	ALTO see Pa
Fz	NIMBO see Pb

Gd	LIGHTING
Ge	RADAR
Gf	WATCHMAN
Gg	TACAN
Gh	VHF
Gi	UHF
Gj	BARRIER
Gk	PAR
Gl	SRA
Gm	SSR
Gn	VFR
Go	IFR

Le	ABOVE
Lf	BELOW
Lg	SIGNIFICANT
Lh	AT
Li	FORECAST

Hd	FOG
He	FROST
Hf	GALES
Hg	GUSTS
Hh	HAZE
Hi	HAIL
Hj	HILL FOG
Hk	ICY
Hl	LIGHTNING
Hm	MIST
Hn	Towering Cumulus
Ho	PARTLY CLOUDY
Hp	RAIN
Hq	SEA FOG
Hr	SNOW
Hs	STRONG WIND
Ht	LIGHT
Hu	HEAVY
Hv	DENSE
Hw	THUNDER
Hx	TURBULENCE

Ia	CRASH
Ib	EMERGENCY
Ic	BIRDS
Id	SERVICABLE
Ie	UNSERVICABLE
If	ROTARY WING
Ig	FIXED WING
Ih	LEFT
Ii	RIGHT
Ij	UP
Ik	DOWN
Il	FEW
Im	SCATTERED
In	ON
Io	OFF
Ip	BROKEN
Iq	OVERCAST
Ir	WET
Is	DRY
It	WITHDRAWN
Iu	UNLIT
Iv	TEMPORARILY
Iw	WORK IN PROGRESS
Ix	VISUAL
Iy	RPS
Iz	WEATHER

Ja	CULDROSE
Jb	YEOVILTON
Jc	PORTLAND
Jd	BOSCOMBE
Je	BOURNEMOUTH
Jf	BRISTOL
Jg	BRIZE NORTON
Jh	CARDIFF
Ji	CHANNEL
Jj	CHIVENOR
Jk	EXETER
Jl	FARNBOROUGH
Jm	LYNEHAM
Jn	MANSTON
Jo	PLYMOUTH
Jp	PREDANNACK
Jq	SCILLIES
Jr	SHAWBURY
Js	SOUTHAMPTON
Jt	ST.ATHAN
Ju	ST.MAWGAN
Jv	UPPER HEYFORD
Jw	WADDINGTON
Jx	WESSEX
Jy	WITTERING
Jz	COTSWOLD

Ka	THIS IS
Kb	Weather time
Kc	REPORT
Kd	Weather Diversion
Ke	Crash Diversion
Kf	Terminal Information
Kg	Fixed Wing Diversion
Kh	Rotary Wing Diversion

Ma	VALLEY
Mb	MERRYFIELD
Mc	WYTON

Na	IN
Nb	OUT

Pa	ALTO
Pb	NIMBO
Pc	CUMULO

Qa	TIMES
Qb	DEPARTURES
Qc	RECOVERY

La	THIS IS A TEST MESSAGE
Lb	THE AUTOMATIC ATIS SERVICE IS TEMPORARILY SUSPENDED
Lc	NO SIGNIFICANT WEATHER
Ld	TEN KILOMETERS OR MORE see Cm